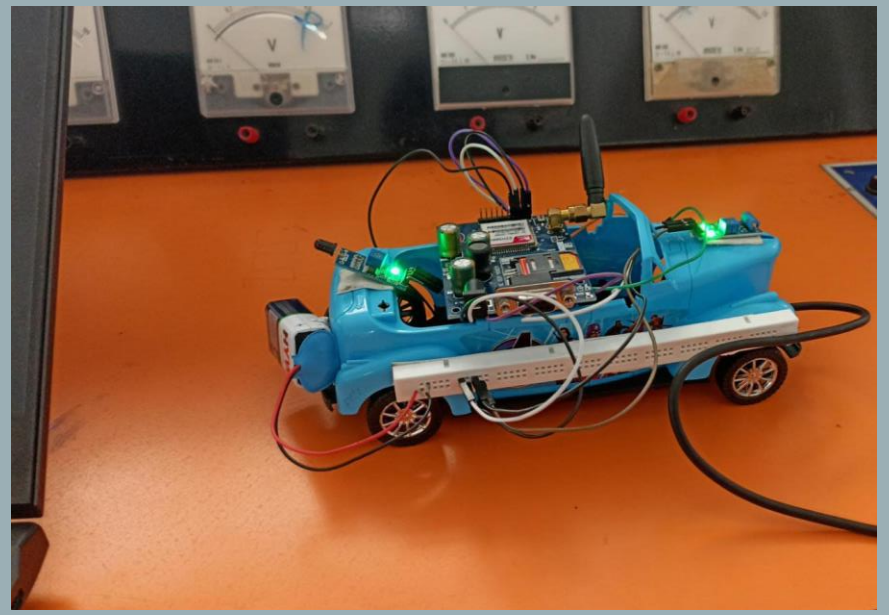
HACK2TECH SUSTAIN 2024

TEAM NAME: DREAM TEAM

TITLE: Accident Detection and Alert System
(ArduinoGuard)



COLLEGE NAME: PSG Institute of Technology and Applied Research

MEMBERS:

1) Sarveshware S
2) Lokesh Dhanvanthri K S
3) Sarath Suriya
4) Vijey Santhosh S A

CONTACT:

Phone Number : 6369883747 , 9786038484

PROBLEM STATEMENT:

- Accidents on roadways and in various environments pose significant threats to human lives and property. Timely detection and rapid response to accidents are critical to mitigate their consequences. Therefore, there is a pressing need for an efficient Accident Detection and Alert System that can automatically identify accidents and promptly notify the relevant emergency services. The primary goal of this project is to develop a robust system that can accurately detect a wide range of accidents, such as vehicle collisions, falls, and industrial accidents, and swiftly communicate the information to appropriate stakeholders.

- To avoid the above tragic events, we have come up with an Accident detection and Alert system. In this when the accident is detected, it would be intimated to patrols and the nearest hospital. By this we could cast aside the tragic events.

SOLUTION:

- As soon as the accident occurs, some **sets of conditions** are established related to vibration and flame and by satisfying those conditions we could confirm that the accident has occurred.
- When these conditions are satisfied, by using **GPS and GSM module** we could transmit the **google map location** of the place where the accident has occurred along with the coordinates.
- By using this we could also send an **alert message** about what sort of accident happened. (example: fire ,crush injury, vehicle rollover)
- By using **AIML algorithms** the hospital location which is near to accident location found.
- The location is transmitted to the nearby patrol and hospital.

By this we could eliminate heavy losses.

COMPONENTS:

The system will use a combination of sensors to monitor conditions, detect accidents, and trigger appropriate alerts. It will have two main components:

Accident Detection Module:

a) Accelerometer/Gyroscope Sensor: Use an accelerometer and gyroscope sensor to detect sudden changes in motion, acceleration, and orientation. A significant change may indicate an accident or collision.

b) GPS Module: Incorporate a GPS module to determine the device's location. This data will be crucial for emergency services to locate the accident site.

c) Microcontroller (Arduino): Arduino will process sensor data and determine if an accident has occurred based on predefined thresholds. If an accident is detected, it will trigger the alert system.

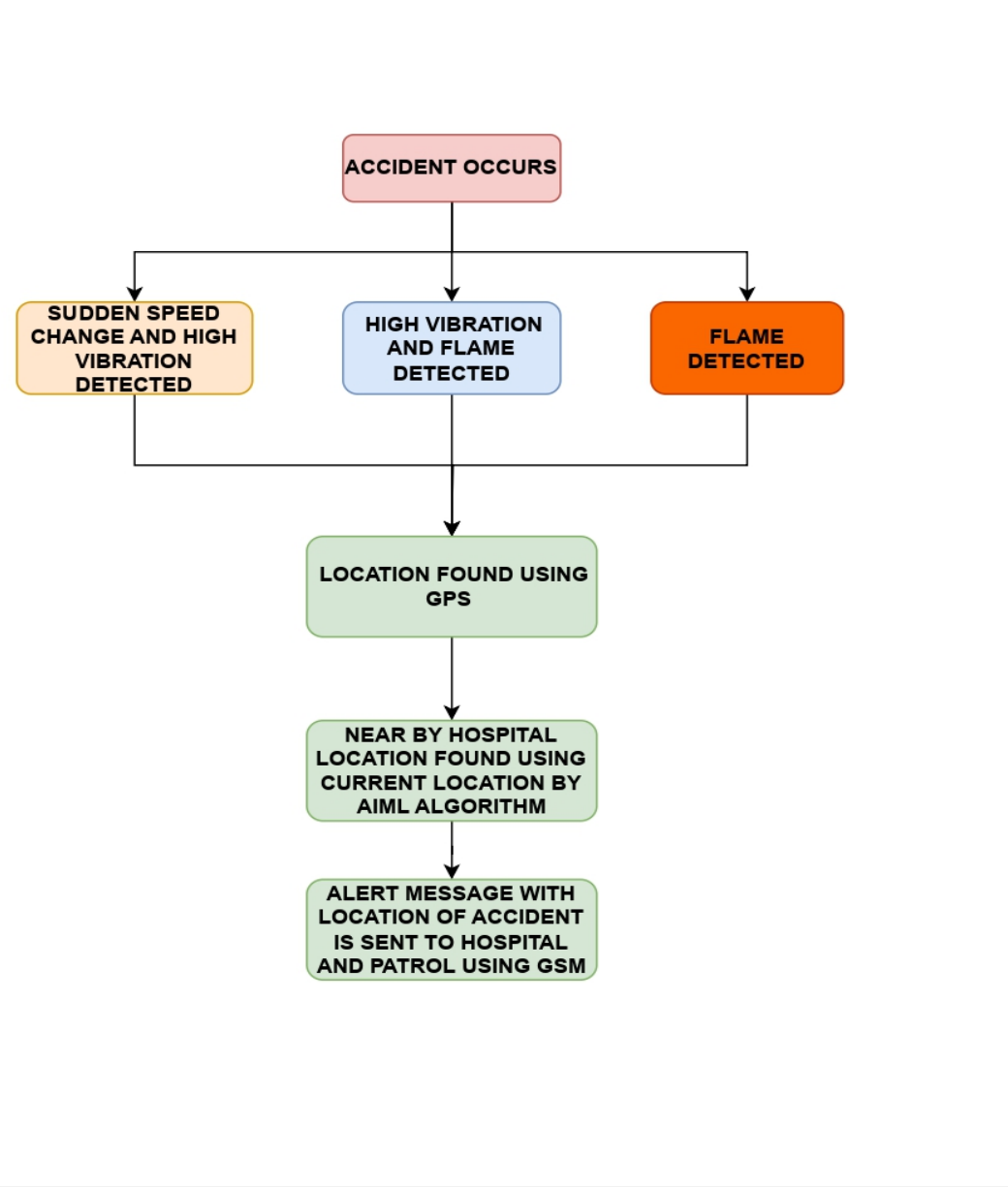
d) Flame Sensor and Vibration Sensor: Flame Sensor is used to detect if any fire accident has occurred.

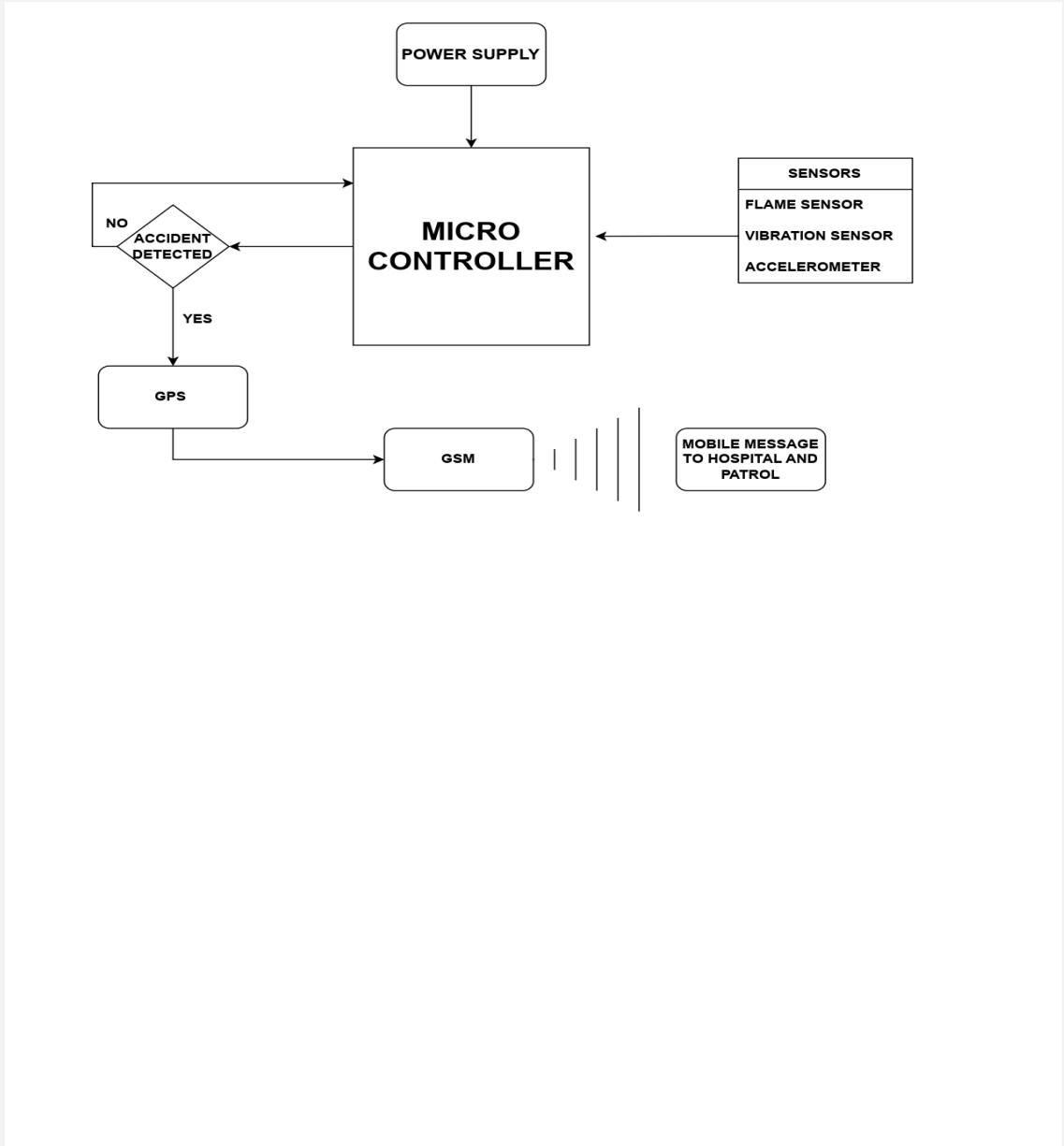
Vibration Sensor is used to detect the vibration produced by the car and based on the vibraton accident is detected.

Alert System:

a) GSM Module: Utilize a GSM module to send SMS alerts to predefined emergency contacts or a centralized monitoring system.

IMPLEMENTATION PLAN & FLOW CHART :





Unique Value Proposition (UVP) :"ArduinoGuard: Smart, Affordable, and Customizable Accident Protection"

Explanation:

- **Smart Technology:** The term "Smart" implies that the system utilizes advanced technology and intelligence. It communicates that ArduinoGuard is not just a basic safety device but incorporates smart features for better accident detection and alerting.
- **Affordability:** By including "Affordable" in the UVP, you highlight the cost-effectiveness of the solution. This can be a significant advantage compared to more expensive, proprietary accident detection systems.
- **Customizability:** The word "Customizable" communicates that users can adapt the system to their specific needs and preferences. Arduino-based systems are known for their flexibility, allowing users to add or modify features as desired.
- **Comprehensive Accident Protection:** The term "Accident Protection" suggests that ArduinoGuard is a complete solution for safety, covering a wide range of potential accident scenarios.
- **Trusted Arduino Platform**: By mentioning "Arduino," you leverage the trust associated with this well-established and popular open-source platform. This communicates that the system is built on a reliable and widely recognized foundation.

This UVP effectively communicates the unique selling points of the Arduino-based accident detection and alert system, including its intelligence, affordability, customizability, and the trusted Arduino platform as its foundation. It emphasizes that users can have a smart, tailored safety solution at an accessible cost.

EXPECTED IMPACT :

- Improved Emergency Response Time
- Enhanced Accuracy in Accident Detection
- Effective Resource Allocation
- Optimized Medical Assistance
- Enhanced Safety Awareness

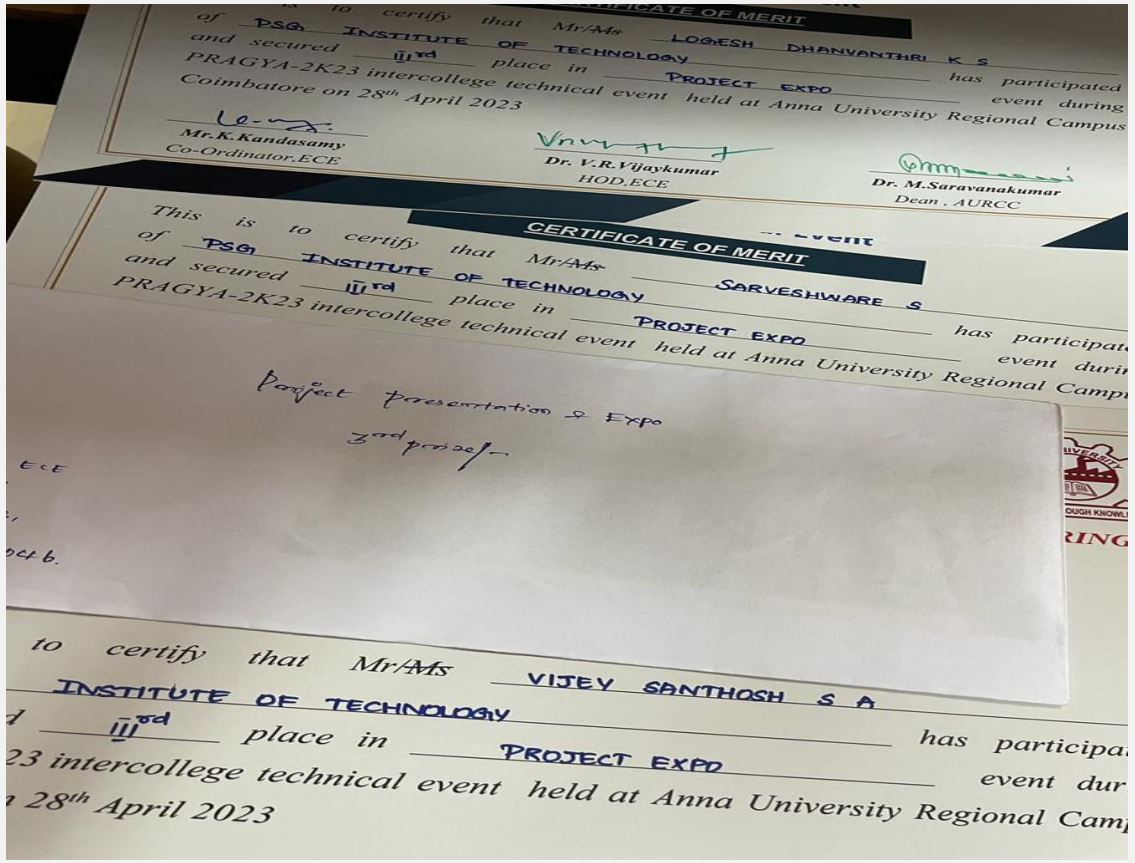
MARKET ANALYSIS:

- The market for safety and IoT devices continues to grow as people become more conscious of their well-being.
- Competitors include commercial accident detection devices, mobile apps, and car manufacturers' built-in safety systems.
- A niche exists for affordable, customizable, and education-friendly solutions, which Arduino-based systems can provide.

MARKETING AND SALES STRATEGY (TARGET MARKET):

- Digital marketing to reach a wide audience, including educational content for Arduino enthusiasts.
- Partnerships with Arduino communities and DIY electronics websites.
- Demonstrations at technology and safety expos.
- Small-scale businesses seeking affordable accident detection solutions.
- Individuals concerned about road safety.

TESTIMONIALS in PAST:



THANK YOU!!!